

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

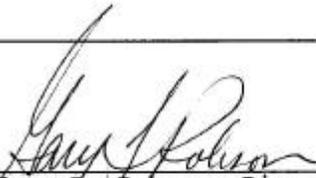
METHOD OF DETERMINING EXPANSION PRESSURE
OF COMPACTED AGGREGATE SPECIMENS

- 1.0 PURPOSE
- 1.1 To set forth a method of test for determining the amount of expansion pressure (KPa) exerted by compacted aggregate.
- 2.0 SCOPE
- 2.1 This method of test is applicable when compacted aggregate is planned for use where expansion could be detrimental.
- 3.0 EQUIPMENT
- 3.1 A manually or mechanically operated rammer with compatible 102 mm molds and collar assemblies as described in AASHTO T 99.
- 3.2 An expansion pressure device with accessories, including a perforated bronze disc, and deflection gauge as described in AASHTO T 190.
- 3.3 Drying Oven, capable of maintaining $110^{\circ} \pm 5^{\circ}\text{C}$.
- 3.4 U.S. Standard 19.0 mm.
- 3.5 Humidity Oven, capable of maintaining 60°C at 95% humidity.
- 4.0 TEST PROCEDURE
- 4.1 Dry the sample aggregate at $110^{\circ} \pm 5^{\circ}\text{C}$ to a constant weight.

- 4.2 Sieve the oven dried material over a 19.0 mm sieve, discarding all material retained on the 19.0 mm sieve.
- 4.3 Determine optimum moisture and maximum density.
- 4.4 Add sufficient water to the test sample of 1200 grams to 1500 grams, to bring it to optimum moisture.
- 4.5 Compact the sample in three layers in a standard 4 inch compaction mold to approximately half full by 25 uniformly distributed blows per layer from the rammer described in AASHTO T 99.
- 4.5.1 If difficulty is encountered in sufficiently compacting the material to remain in the mold unaided, a thin piece of rubber may be cut so as to fit the bottom of the mold which can be held in place with a seal of vaseline.
- 4.6 Insert the perforated bronze disc on top of the compacted material.
- 4.7 Place the mold, housing the compacted material and perforated plate into a calibrated expansion device. By rotating the turntable on which the mold rests, elevate the specimen until the stem on the base plate contacts the spring steel bar on the expansion device and causes deflection on the deflection gauge of 0.025 inch on the negative side of the zero.
- 4.8 After carefully placing the expansion device, mold, plate, and specimen in a humidity oven calibrated at 60°C and 95% humidity, complete the zeroing process by inserting the allen wrench in the adjustable gauge plug (located on the top of the device) and turning it until the gauge reads zero.
- 4.9 Obtain at least daily readings from the deflection gauge and record through a minimum of 300 hours of continuous testing.

5.0 CALCULATIONS

- 5.1 To convert the deflection gauge reading to KPa, multiply the gauge reading by 2618 which is the deflection coefficient as derived from the Soils Manual for Design of Asphalt Pavement Structures published by the Asphalt Institute.



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